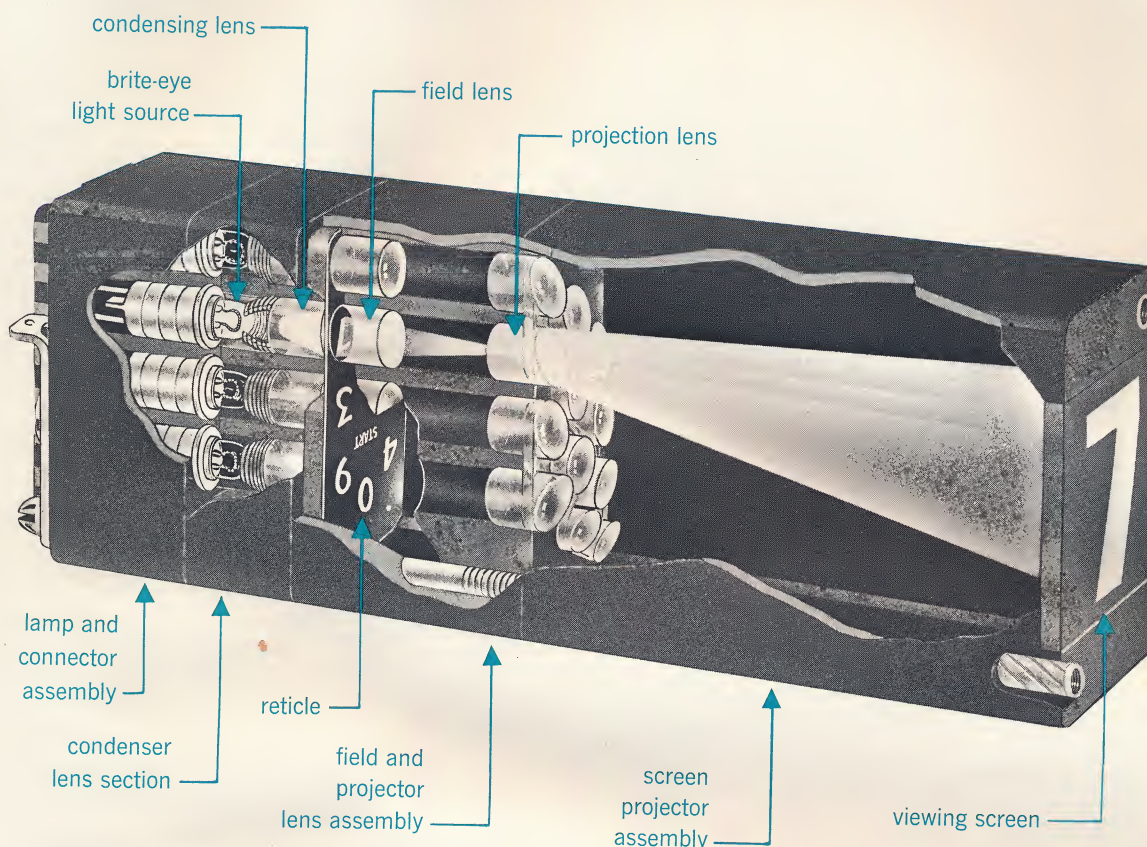


**SHELLY
READOUTS**

8



most complete line of **PROJECTION-TYPE READOUTS**



Shelly Readouts are the rear projection type. Each Shelly Readout contains twelve separate miniature optical systems. The light source in each of the optical systems may be energized separately to produce twelve different messages. For greater versatility it is possible to energize the lights in more than one optical system at the same time to provide a greater variety of useful information. Numbers, words, symbols and colors may be added and subtracted. Note that the Shelly Readout is constructed of simple modules. Such modularity means that no adjustment is necessary after assembly even in the field. The lamps or message reticles may therefore be replaced by the user.

High reliability is designed into the Shelly Readout. The source lights, for example, are Brite-Eye Micro-Minature Lights (MS 90308). Brite-Eye lights employ highly reliable T-1 lamps. These lights will provide a rated life of from 5,000 to 200,000 hours depending on voltage, amperage and brightness requirements.

Resistance to shock and vibration is assured by the Shelly Readout's simple modular design. When required, immunity to fungus is provided by the use of a metal message reticle.

SHELLY TWELVE MESSAGE **BINARY** READOUTS

MODEL BDR-100

(Military Specifications)

The Model BDR-100 is a binary-to-decimal readout consisting of the SRO-100 projection system and a lamp assembly containing the necessary lamp drivers, gates, and complementary function generators for decoding the standard 8-4-2-1 binary code. It accepts four-line parallel binary coded decimal information, decodes it into twelve messages, and displays the desired message on the viewing screen in clear, distinct characters.

■ Measures $\frac{3}{4}$ " wide, $1\frac{1}{8}$ " high, $4\frac{1}{8}$ " long. Weighs less than 3 ozs. ■ High brightness at low current, standard voltages 5 through 28 volts. ■ 14 contact printed circuit type connector, .125 centers. ■ Designed to meet MIL-E-5272. ■ Uses standard military and commercial T-1 lamps. ■ Decoding for 5-3-1-1 and other systems is optional.

MODEL MBR-100

(Military Specifications)

The Model MBR-100 is a binary-to-decimal readout with memory feature, consisting of the SRO-100 projection system and a lamp assembly containing a solid-state memory, drivers, gates, and complementary function generators for decoding the standard 8-4-2-1 binary code. It accepts four-line parallel binary coded decimal information, decodes it into twelve messages, and displays the desired message on the viewing screen until a reset pulse is applied. Silicon controlled switches are used for the memory elements.

■ Measures $\frac{3}{4}$ " wide, $1\frac{1}{8}$ " high, $4\frac{3}{4}$ " long. Weighs less than 3 ozs. ■ High brightness at low current, standard voltages 3 through 28 volts. ■ 14 contact printed circuit type connector, .125 centers. ■ Designed to meet MIL-E-5272. ■ Uses standard military and commercial T-1 lamps. ■ Decoding for 5-3-1-1 and other systems is optional.

ACTUAL SIZE

ACTUAL LENGTH $4\frac{3}{4}$ "

SHELLY TWELVE MESSAGE **DIGITAL** READOUTS

MODEL SRO-100

(Military Specifications)

■ Measures $\frac{3}{4}$ " wide, $1\frac{1}{8}$ " high, $3\frac{1}{2}$ " long. Weighs less than 3 ozs. ■ High brightness at low current, standard voltages 3 through 28 volts. ■ 14 contact printed circuit type connector, .125 centers. ■ Designed to meet MIL-E-5272. ■ Uses standard military and commercial T-1 lamps. ■ Available with 24-pin or printed circuit connectors.

MODEL SRO-300

(Economy version of SRO-100)

■ Measures $\frac{3}{4}$ " wide, $1\frac{1}{8}$ " high. Mounts in approximately $3\frac{1}{4}$ " depth. Weighs less than 3 ozs. ■ High brightness at low current, standard voltages 3 through 28 volts. ■ 14 contact printed circuit type connector, .125 centers optional. ■ Uses standard military and commercial T-1 lamps. ■ Available with 24-pin or printed circuit connectors.

MODEL DAR-100

(Military Specifications)

The Model DAR-100 Driver Augmented Readout consists of the SRO-100 projection system and a lamp assembly containing twelve silicon planar epitaxial transistors in a common-emitter configuration for driving the incandescent lamps from low-power (decimal) signal sources. The collector of each transistor is internally connected to its respective lamp, and the base of each transistor is available at the connector. The DAR-100 is designed for use with all standard lamp voltages.

■ Measures $\frac{3}{4}$ " wide, $1\frac{1}{8}$ " high, $3\frac{3}{4}$ " long. Weighs less than 3 ozs. ■ High brightness at low current, standard voltages 3 through 28 volts. ■ 14 contact printed circuit type connector, .125 centers. ■ Uses standard military and commercial T-1 lamps. ■ Ambient temperature (operating) -20°C to $+100^{\circ}\text{C}$. ■ Designed to meet MIL-E-5272.

ACTUAL SIZE

ACTUAL SIZE

ACTUAL SIZE

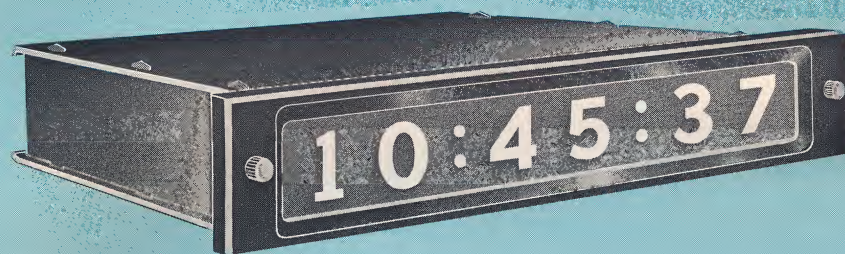
SHELLY PUSH-BUTTON **SWITCH** READOUT

MODEL ROS-500 READOUT SWITCH

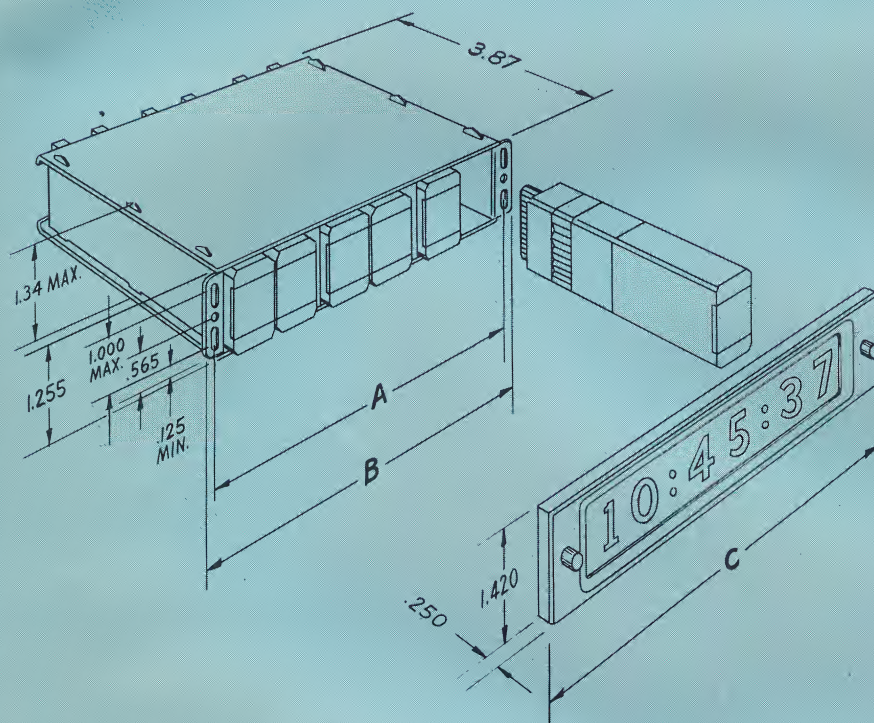
The ROS Readout switch combines the features of a push-button switch and the visual control of a projection type readout. It features 12 message positions which may be displayed individually or in combination by depressing the front viewing screen of the readout.

■ Measures 1" wide, $1\frac{1}{4}$ " high, $5\frac{1}{4}$ " long. Weighs less than 5 ozs. ■ High brightness at low current, standard voltages 5 through 28 volts. ■ Uses standard military and commercial T-1 lamps. ■ Character height $\frac{1}{2}$ ". ■ Lamp life 5,000 to 100,000 hours depending upon voltage and current. Bezels available.

ACTUAL LENGTH $5\frac{1}{4}$ "



MOUNTING ASSEMBLY AND BEZEL



Dash No.	No. of Digits	A	B	C
- 2	2	2.010	2.260	2.630
- 3	3	2.760	3.010	3.385
- 4	4	3.520	3.770	4.140
- 5	5	4.275	4.525	4.895
- 6	6	5.030	5.280	5.650
- 7	7	5.785	6.035	6.405
- 8	8	6.540	6.790	7.160
- 9	9	7.295	7.545	7.915

All Shelly readout assemblies are equipped with a continuous viewing screen for fast, accurate reading. Each readout from left to right must be specified as to what information it should contain. The drawing at the left depicts a military assembly.

NOTES:

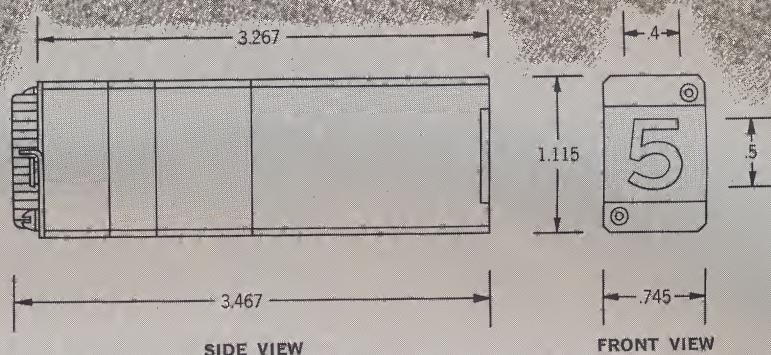
1. SPACERS—Illuminated and blank spacers available. Standard size 0.250 wide by 1.115 high. Special widths available on special order. EXAMPLE: Colon spacer for digital clock contains two T-1 lamps and plugs into connector. Add 0.250 to all letter dimensions at left for each colon spacer.
2. MOUNTING SLOTS—Slots are 0.125 wide by 0.300 high. Minimum and maximum dimensions shown are to centers of slot ends.

THIS IS AN ACTUAL SIZE ASSEMBLY OF NINE SHELLY READOUTS—ONLY 6¾" OVERALL LENGTH



WORDS, COLORS, NUMBERS OR SYMBOLS MAY BE DISPLAYED ON SHELLY READOUTS

SHELLY READOUT MODEL SRO-100 DIMENSIONS



CHARACTER HEIGHTS

.500" MAXIMUM ONE LINE	1 OR 2 CHARACTERS MAXIMUM 2 CHARACTERS PER POSITION
.225" MAXIMUM TWO LINES	MAXIMUM 4 CHARACTERS PER LINE MAXIMUM 8 CHARACTERS PER POSITION
.125" MAXIMUM THREE LINES	MAXIMUM 6 CHARACTERS PER LINE TOTAL 18 CHARACTERS PER POSITION
.100" MAXIMUM FOUR LINES	MAXIMUM 8 CHARACTERS PER LINE TOTAL 32 CHARACTERS PER POSITION

NOTE: MINIMUM STANDARD SIZE OF ANY CHARACTER IS .100". ABOVE ARE STANDARD SIZE; ANY DEVIATION WILL REQUIRE SPECIAL QUOTE. ANY SPACE BETWEEN CHARACTERS IS COUNTED AS A CHARACTER. EXAMPLE: 3 AP WOULD BE COUNTED AS FOUR CHARACTERS, 1234.

STANDARD COLORS AVAILABLE

RED GREEN BLUE AMBER

Several methods may be employed with color:

1. Colored background with white character.
2. Colored character with black background.

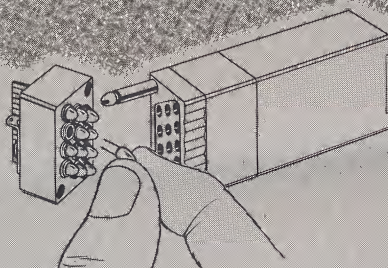
An advantage of using a colored background with white number or symbol is that the background can be used independently, i.e. flashed on or off, etc.

LAMP INFORMATION

LAMP	RATING	LIFE	MSCP
76	3v-120ma	16,000	.15
715	5v-114 ma	16,000	.147
74	10v- 27 ma	10,000	.10
66	12v- 60 ma	10,000	.15
75	18v- 26 ma	10,000	.15
62	28v- 24 ma	16,000	.15

RELAMPING

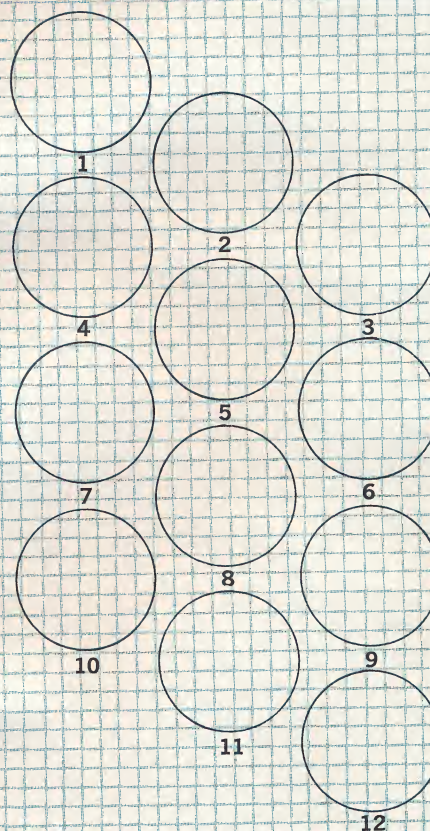
Changing lamps in the Shelly Readout is fast and easy. No tools are required. You simply remove the burned out lamp with your fingers and insert another lamp in its place.



RETICLE ORDERING INSTRUCTIONS

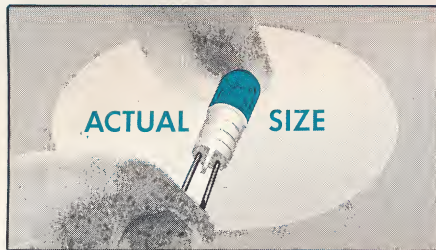
1. Determine message for each reticle.
2. Designate type style.
(Alternate Gothic No. 3 is standard.
Other type styles on special order)
3. Sketch message in proper location on reticle layout tracing sheet.
4. Unusual symbols should be provided in the form of finished artwork.
5. Specify message color and background color for each reticle.

RETICLE LAYOUT



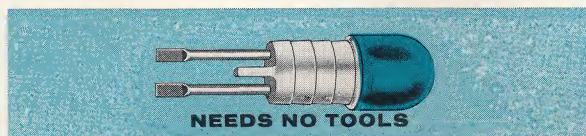
Brite-Eye

MICRO-MINIATURE INDICATOR LIGHT



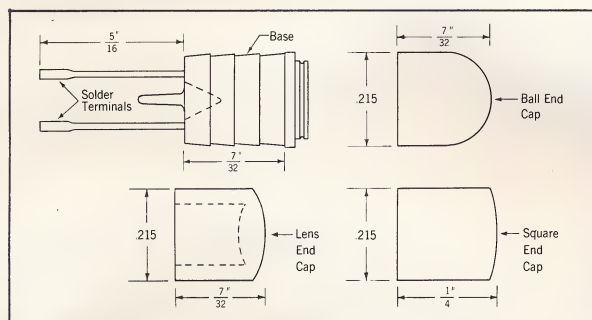
MS 90308 (WEP)

- Installed and relamped from front of panel — no tools required.
- Completely new relampable concept — no lamp base — no socket.
- Brighter than indicators five times as large. Indicates in direct sunlight.



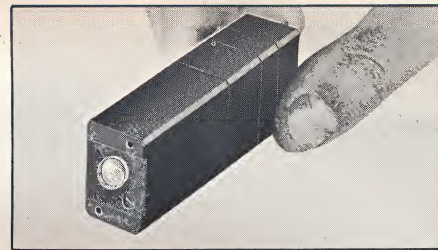
SPECIFICATIONS

- Feather light — weighs only .3 grams complete.
- Economical — saves space and installation time.
- Micro-Miniature — smaller than any other relampable indicator.
- Can be mounted on less than 1/4" centers (.218 in.)
- Three different caps — round, square, or focusing lens end.
- Color — transparent caps available in red, green, blue, amber, and clear. Translucent caps available in red, green, yellow, and white.
- Lamps — choice of 1.5, 3, 5-6, 10, 12, 18, 28 volt T-1 lamps.
- Base and cap — molded from high heat-resistant Lexan®
- Current drain as low as 8 milliamperes (.008 amperes).



Level-Eye

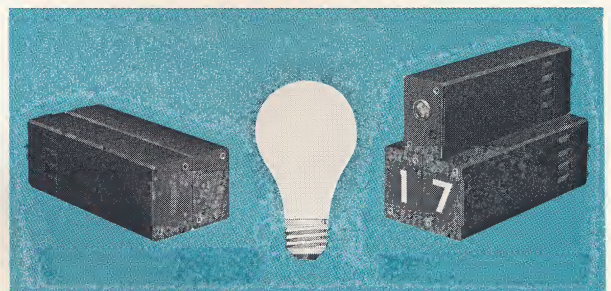
AUTOMATIC LIGHT CONTROL FOR READOUTS



LE-100

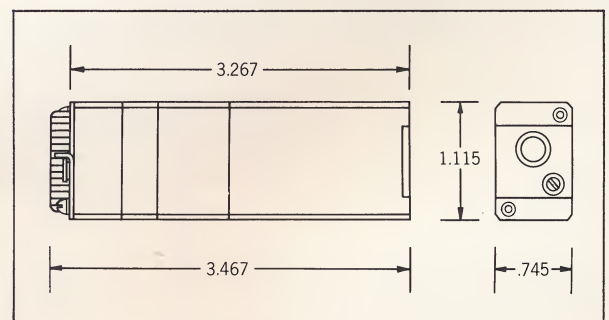
SPECIFICATIONS

- Connector and dimensions identical to the SRO-100.
- Supply Voltage: to 37v. (determined by lamp characteristics).
- Output Voltage: to 36v. (determined by ambient light and supply voltage).
- Lamp (load) Power: 5.0W max.
- Lamp (load) Current: 1.0A max.
- Operating temperature: — 20° C to + 85° C.



The Level-eye contains a light-sensitive cell with spectral response closely approximating that of the human eye, and a solid-state control circuit. By adjusting lamp supply voltage according to ambient light conditions, the Level-eye protects the equipment operator from being dazzled by panel lights when the overhead lights are turned off; conversely, the Level-eye eliminates the loss of information that occurs when high-intensity light is directed at a dimly-lighted panel or readout.

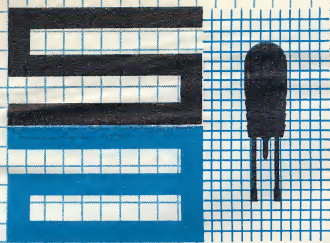
A "dark threshold" control is provided for adjustment to the individual operator's dark adaptivity; after this adjustment is made, the operation of the Level-eye is completely automatic.



CAL-GLO COMPANY

A DIVISION OF SHELLY ASSOCIATES INC.

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PHONE 322-2374 • AREA CODE 213



SHELLY SRO-100 READOUT RETICLE LAYOUT SHEET

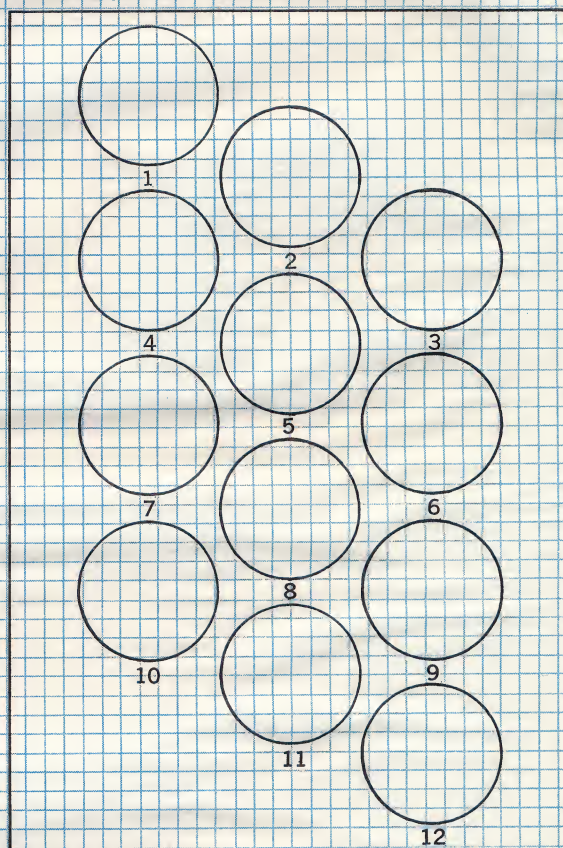
ORDERING INSTRUCTIONS

1. Specify type style _____
2. Lamp type _____
3. Model No. _____
4. Special features _____

RETICLE NO.	MESSAGE HEIGHT	MESSAGE COLOR	BACKGROUND COLOR
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

RETICLE LAYOUT

Viewed from front viewing screen

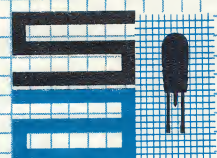


Customer _____

Address _____

Drawn by _____

Customer's Reference _____



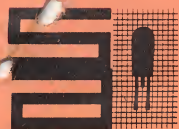
Return to

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PRICING INFORMATION

Standard Readout

Reticule: Mylar film with numerals 0 thru 9 plus(+) and minus(-) signs, or 0 thru 9 with right and left hand decimal points.

Power Connection: 14 position printed circuit board (2 common grounds and 12 connections)

Lamps: See List

Mounting: Front mount in single & multiple units

Alternates Available:

Special configurations on reticle. There is a \$40. non-recurring charge for each format change.

Fungus resistant metal reticle

Multicolor presentations

Rear plug in mount.

Power connection, solder or wire wrap pins, separate ground, split ground or common ground.

15 pin locking connector (Amphenol or equal)

Front Access Mounting Assembly:

Applicable to SRO-100, BDR-100, MBR-100, DAR-100 and ROS-500.

Standard Housing, 2 to 9 units, consisting of

2 end plates

1 top plate

1 bottom plate

1 screen

2 thumb screws

Price per assembly 8.00

Female connector block per position 1.25

Bezels priced separately

Bezels:

unit	1	2	3	4 or more
price, each.	4.00	5.50	6.25	9.00

Special Housings and Bezels available on special order.

SRO-300: Available in groups of 2 thru 9

Provides mounting assembly housing, screen, standard reticle, lamp and optics module.

Rear mounting only. Bezels priced separately.

Level-Eye

Model LE-100 Model LE-100A

1-99	55.00	57.00
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100-249	51.00	53.00
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250-499	47.50	49.50
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500-up	45.00	47.00
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10/26/64

Supersedes all previous price sheets.

Type	Quantity	5V 115 mils Commercial	5V 115 mils MIL-SPEC	10V 27mils 12V 60mils 18V 26mils 28V 24mils
SRO-100	1-9	29.80	36.00	38.75
	10-49	28.55	34.75	37.50
	50-99	27.30	33.50	36.25
	100-249	26.10	32.30	35.05
	250-499	24.20	30.40	33.15
	500-999	23.30	29.50	32.25
	1000 & over	22.65	28.85	31.60
BDR-100 10 Digit	1-99	113.00	119.00	122.75
	100-249	103.00	110.00	112.75
	250-499	95.00	102.00	104.75
	500, over	91.00	98.00	100.75
BDR-100 12 Digit	1-99	120.00	126.20	128.95
	100-249	110.00	120.20	122.95
	250-499	102.00	108.20	110.95
	500, over	98.00	103.20	106.95
MBR-100 10 Digit	1-24	143.00	149.00	167.50
	25-49	133.00	139.00	157.50
	50-99	125.00	131.00	145.50
	100, over	121.00	127.00	141.50
MBR-100 12 Digit	1-24	152.00	174.20	176.95
	25-49	142.00	164.20	166.95
	50-99	134.00	156.20	158.95
	100, over	130.00	152.20	154.95
DAR-100	1-99	49.90	56.10	58.75
	100-499	45.30	51.50	54.25
	500-999	41.40	47.60	50.35
	1000, over	To be negotiated		
ROS-500	1-9	45.75	51.95	54.70
	10-49	44.50	50.70	53.45
	50-99	43.30	49.50	52.25
	100-249	42.10	48.30	51.05
	250-499	40.20	46.40	49.15
	500-999	39.30	45.50	48.25
	1000, over	35.80	42.00	44.75
SRO-300	1-499	18.50	24.70	27.45
	500-999	16.50	23.70	26.45
	1000, over	14.50	20.70	23.45

Above prices
include lamps 4.80 11.00 13.75
@

Terms: $\frac{1}{2}\%$ 10 days, 30 days Net
F.O.B. El Segundo, Cal.

Prices subject to change without notice

PS-1064-1